

PROPOSED STUDY TO DETERMINE EXTENT OF WORLD TRADE CENTER IMPACTS TO THE INDOOR ENVIRONMENT

Prepared by:
U.S. Environmental Protection Agency
Office of Research and Development and Region 2

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Background

March 2002 – June 2003: EPA Region 2 embarks on a volunteer clean and test program for residential apartments in lower Manhattan.

- Funded by FEMA, cleaning was professionally done.
- 4,200 of 23,000 apartments serviced - 3,400 for clean and test and 800 for test only.
- “Test” was an air test for asbestos. A re-cleaning or cleaning was offered if the air concentration exceeded 0.0009 structures/cc.
- 1% of “clean and test” were contaminated. 1% of “test only” were contaminated. Re-cleanings were offered for the 44 apartments and most accepted. 91 (or 2%) of apartments had “filter overloads” and were also offered re-cleaning.
- Approximately 1000 pre-clean wipe samples in 263 apartments were also taken and analyzed for 24 contaminants, including lead, mercury and other metals, and dioxin.

Background (cont.)

- October 2003: CEQ Chairman Connaughton in a letter to Senators Clinton and Lieberman stated that EPA will establish an expert technical review panel to study issues of “recontamination” of the affected area, and ongoing health impacts as tracked by health registries and similar mechanisms. Specifically, the panel was asked to review:
 - *Post-cleaning verification sampling to be done by EPA in the residential areas included in EPA’s Indoor Air Cleanup to verify that re-contamination has not occurred from central heating and air conditioning systems.*
 - *The conclusion that asbestos was an appropriate surrogate in determining risk from other contaminants.*

Background (cont.)

- *Identification of any areas where the health registry could be enhanced to allow better tracking of post-exposure risks by workers and residents.*
- *Review and synthesize the ongoing work by federal, state, and local governments and private entities to determine the characteristics of the WTC plume and where it was dispersed, including the geographic extent of EPA and other entities' monitoring and testing, and recommend any additional evaluations for consideration by EPA and other public agencies.*

Background (cont.)

- March – November 2004:
 - EPA developed a sampling plan based on the stated objective to determine the potential for “recontamination.” Individual panel members and the public supported an alternate study design to determine the current level and geographic extent of remaining “contamination.”
 - EPA conducted external review on the issue of whether asbestos is an appropriate surrogate for WTC contamination. All peer reviewers supported the notion of using asbestos as a surrogate, but some reviewers additionally encouraged the use of lead as a second surrogate. Individual panel members, supported by the public, instead promoted the idea that a “WTC signature” exists in dust.
 - A draft proposed sampling plan (based on input from individual panel members and the public) was published in the Federal Register for public comment in October. Formal public comment period closed on January 18, 2005.

Public Comments

- **The title and objectives are inaccurate and inadequate. They should be specific with regard to the geographic extent, the fact that analysis is included as well as sampling, and that it should include a statement concerning adequacy of the cleanup for the safety of building occupants.**

Discussion point:

- The objective of the sampling is to determine the current level and geographic extent of WTC impact.

Public Comments

- The sampling protocol is not extensive enough to cover all areas likely affected by the building collapse and the ensuing fires. Specifically, Brooklyn should be included, as well as Chinatown, areas impacted by the transport of waste, and other areas. Expanding the area of sampling would obviate the need for a Phase II.

Discussion Points:

- Chinatown is within the Houston Street border, as are major routes used to transport waste from Ground Zero.
- If Brooklyn is included, how much of Brooklyn?

Public Comments

- **Voluntary participation will likely result in a non-representative sampling, and more importantly, may result in selecting volunteers who are more likely to have taken preventative or remedial action (e.g., professional cleaning) already. Alternately, buildings should be selected on a statistical random basis, to sample from a stratified population, and then the participation of selected building should be sought.**

Discussion Points:

- Participation by randomly selected buildings could lead to a substantially more valid result.
- EPA will not sample buildings unwilling to participate, so there will need to be a substantial recruitment effort in any case, and the final survey will be a volunteer survey.

Public Comments

- **EPA used an inadequate set of criteria for selection of contaminants of potential concern (COPCs). It was based on frequency of detection or exceedance of a criteria in outdoor sampling, and this would be inappropriate for indoor conditions. Importantly, contaminants on smaller particles would likely impact the indoor environment, and this was not considered when choosing COPCs. Also, dioxin and mercury should be included as COPCs.**

Discussion Points:

- Much indoor data considered when developing COPCs.
- During 2002 wipe sampling of 263 apartments, there were only 5 exceedances of the mercury benchmark in 915 pre-clean samples, and 6 exceedances of the dioxin benchmark in 859 pre-clean samples.
- TEM will be used to count all-sized fibers.

Public Comments

- **Hard and soft surfaces should both be sampled for all contaminants. EPA should be specific about what hard and soft surfaces to sample, and not leave it up to a field decision.**

Discussion Points:

- Current proposal is to use HEPA for asbestos, silica, MMVF and signature compounds; wipes for PAHs and lead.
- Microvac could supplant HEPA and would have advantages with regard to load instead of concentration generation.
- Cost as a consideration
- Current proposal suggests sampling floors, furniture, tables or counters, ceilings, walls or drapery in areas of activity (living rooms, class rooms, offices, etc.) and areas of accumulation (behind or on top of cabinets/bookcases or refrigerators). What other areas might we sample? Why?

Public Comments

- **HVAC are critical reservoirs for dispersion of contaminants; the sampling plan needs to more fully realize this by placing a high priority on HVAC sampling. The HVAC sampling plan should be more detailed (e.g., specify what specific parts of HVACs) and more uniform between buildings (e.g., sampling at uniform distances within HVACs in all buildings).**

Discussion Point:

- HVAC sampling includes: outdoor air inlet to HVAC; air filters; air-mixing plenums serving sampled floors; and the HVAC outlet adjacent to locations where COPC samples are taken.

Public Comments

- **Cleanup should proceed as soon as possible and should be based on measurement of COPCs, and even in the absence of a signature. Cleanup should be based on “inaccessible” as well as “accessible” area sampling.**

Discussion Points:

- If not based on evaluating extent of WTC impacts, what would be the objective of a survey on COPCs?
- What would be used for Phase II decision making?
- Dust from inaccessible areas is resuspended much less frequently than dust from accessible areas.
- How is this considered in cleanup decisions?

Public Comments

- ***The 3X background criteria for asbestos, silica and MMVF is not adequately justified, and may be inappropriate.***

Discussion Points:

- Options for cleanup benchmark:
 - 1) Some relation of dust measurement to background.
 - 2) Risk-based benchmark for air concentration based on inhalation pathway.
 - 3) Risk-based benchmark for dust measurement, tied to inhalation pathway via use of “k” factor.
- Issues associated with background approach include cost, time and uncertainty.
- Issues associated with risk-based approach include:
 - Air sampling is inconvenient and technically difficult.
 - “k” factor has large degree of uncertainty.

Public Comments

- **The use of the upper confidence limit on the mean contaminant level in a building as a cleanup criteria is not justified. Building-specific factors need to be considered in building cleanup decisions.**

Discussion Points:

- What other factors?

Public Comments

- In addition to unit cleanup, decisions need to be made on testing other units within a building, sampling and possibly remediating other buildings in the neighborhood, and expanding beyond the borders of Phase I further out as part of a Phase II testing program. EPA has not provided adequate discussions of these other decision endpoints.

Discussion Points:

- Except for Phase II, these decision points not included in sampling program.

Public Comments

- The “signature” is a work in progress. It could differ as a function of distance from Ground Zero, particle size, dispersion patterns, indoor versus outdoor, original source (collapse, fires, site work, etc.), and other factors. There are several other contaminants not considered by EPA, such as metals as promoted by R.J. Lee, or other organic compounds including PCB congeners, PCNs or PBDEs. Also, there could be problems with the contaminants EPA has focused on – PAHs are also associated with transportation and other sources. EPA has not presented anything quantitative and may not be able to in a reasonable time frame to conduct their study. They have not provided specific details, such as the criteria with which to evaluate the validity of a signature. Certainly a signature study would need to be peer reviewed, further delaying its use in this program.

Discussion Points:

- Today’s presentation from the WTC Signature Subgroup

Public Comments

- **Background sampling is critical. The EPA program should extend beyond the impacted areas into background areas, and should include descriptions of how background locations are selected. The sampling methods used in background sampling should be identical to those used in the impacted area sampling.**

Discussion Points:

- Background sampling is critical with regard to generation of background cleanup criteria.
- Much variability expected.
- Cost as a consideration

Public Comments

- **There is a need for a QA/QC Plan.**

Discussion Point:

- A QA/QC Plan was anticipated and will be prepared.